

Appl. No. 10/066,072  
Amdt. dated July 14, 2005  
Reply to Office Action of January 14, 2005

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A system for the reduction of distortion in a wireless communication circuit having a combined signal including a desired signal and a jammer signal, comprising:
  - a down mixer configured to frequency convert at least a portion of the combined signal to substantially a baseband signal;
  - a filter to remove the desired signal from the baseband signal and thereby provide a filtered signal representative of the jammer signal; and
  - an up mixer configured to frequency convert the filtered signal to an upconverted filtered signal at substantially a frequency of the jammer signal;
  - an adder circuit to receive the combined signal and the upconverted filtered signal to thereby remove the jammer signal therefrom, wherein the adder circuit comprises a positive and negative input, the combined signal being coupled to the positive input and the upconverted filtered signal being coupled to the negative input; and
  - a signal mixer coupled to an output of the adder circuit.
2. (Canceled)
3. (Currently Amended) The system of claim 1,3 wherein the wireless communication circuit is a quadrature circuit and the down mixer is a quadrature mixer core, the filter comprising first and second filter portions to filter first and second quadrature components, respectively, and thereby generate first and second filtered signal portions, respectively, the up-mixer comprising first and second quadrature up-mixer portions to convert the first and second signal portions to substantially the frequency of the jammer signal ~~the selected RF~~, and a summer coupled to the first and second quadrature up-mixer portions to combine the converted first and second signal portions.

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4-7. (Canceled)

8. (Currently Amended) The system of claim 1 wherein the filter ~~operates at baseband, the filter being~~ comprises a high-pass filter.

9. (Original) The system of claim 1 wherein the filter is an analog filter.

10. (Original) The system of claim 1 wherein the wireless communication unit has a specified operational bandwidth and the filter has a filter bandwidth based on the operational bandwidth.

11. (Currently Amended) A circuit for the reduction of distortion in a communication circuit having a combined signal including a desired signal and a jammer signal, comprising:

means for down converting at least a portion of the combined signal to substantially a baseband combined signal;

means for filtering the baseband combined signal to remove the desired signal and thereby provide a filtered signal representative of the jammer signal; and

means for up converting the filtered signal to an upconverted filtered signal at substantially a frequency of the jammer signal;

means for adding the combined signal and the upconverted filtered signal to remove the jammer signal therefrom and thereby generate a signal with reduced jammer signal, wherein the means for adding comprises coupling the combined signal to a positive input of an adder and coupling the filtered signal to a negative input of the adder; and

means, coupled to an output of the adder circuit, for mixing the signal with reduced jammer signal.

12. (Canceled)

13. (Currently Amended) The circuit of claim 11, 12 wherein the communication circuit is a quadrature circuit and the ~~mixer core is~~ means for down converting comprises a quadrature mixer core that generates first and second quadrature components,

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wherein the means for filtering comprises means for filtering the first and second quadrature components to thereby generate first and second filtered signal portions, respectively, and the means for up converting comprising means for converting the first and second filtered signal portions to substantially the frequency of the jammer signal ~~the selected RF~~, the circuit further comprising means for combining the converted first and second signal portions.

14. (Currently Amended) A circuit for the reduction of distortion in a receiver configured to receive a radio frequency (RF) signal at a selected RF, the received RF signal being a combined signal containing a desired signal and a jammer signal and a down-converter configured to convert the received RF signal to a selected lower frequency, the circuit comprising:

means for filtering the combined signal at the selected lower frequency to remove the desired signal;

means for converting the filtered signal to the selected RF; and

means for adding the received RF signal and the filtered RF signal to remove the jammer signal to generate an RF signal with reduced jammer signal; and

means, distinct from the downconverter, for frequency converting the RF signal with reduced jammer signal, wherein the means for adding comprises coupling the received RF signal to a positive input of an adder and coupling the filtered signal to a negative input of the adder;

~~wherein the communication circuit is a quadrature circuit and the down-converter is a quadrature down-converter that generates first and second quadrature components at the selected lower frequency wherein the means for filtering comprises means for filtering first and second quadrature components, respectively, to thereby generate first and second filtered signal portions, respectively, and the means for converting comprising means for converting the first and second filtered signal portions to the selected RF, the circuit further comprising means for combining the converted first and second signal portions.~~

15. (Canceled)

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16. (Canceled)

17. (Previously Presented) The circuit of claim 14 wherein the means for filtering comprises a highpass filter operating at baseband.

18. (Original) The circuit of claim 14 wherein the means for filtering comprises an analog filter.

19. (Original) The circuit of claim 14 wherein the receiver has a specified operational bandwidth and the means for filtering uses a filter bandwidth based on the operational bandwidth.

20. (Currently Amended) A method for the reduction of distortion in a wireless communication circuit having a combined signal including a desired signal and a jammer signal, the method comprising:

downconverting at least a portion of the combined signal to substantially a combined baseband signal;

filtering the combined baseband signal to remove the desired signal and thereby provide a filtered signal representative of the jammer signal; and

upconverting the filtered signal to an upconverted filtered signal at substantially a frequency of the jammer signal;

adding the combined signal and the upconverted filtered signal to remove the jammer signal therefrom to produce a jammer canceled signal, wherein adding comprises coupling the combined signal to a positive input of an adder and coupling the filtered signal to a negative input of the adder; and

downconverting the jammer canceled signal to generate a reduced distortion signal.

21. (Canceled)

22. (Currently Amended) The method of claim 20, further comprising:

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receiving a radio frequency (RF) signal at a selected RF, the received RF signal containing the desired signal and the jammer signal;

~~converting the received RF signal to a selected lower frequency wherein the filtering comprises filtering the combined signal at the selected lower frequency to remove the desired signal; and~~

~~converting the filtered signal to the selected RF, wherein the adding comprises adding the received RF signal and the filtered RF signal to remove the jammer signal.~~

23. (Currently Amended) The method of claim 22 wherein the wireless communication circuit is a quadrature circuit and downconverting at least a portion of the combined signal comprises converting the received RF signal to first and second quadrature components at substantially baseband frequencies~~the selected lower frequency~~, filtering comprises filtering the first and second quadrature components, respectively, to thereby generate first and second filtered signal portions, respectively, and upconverting comprises converting the first and second filtered signal portions to the selected RF, the method further comprising combining the converted first and second filtered signal portions.

24. (Original) The method of claim 23, further comprising:  
splitting the combined converted filtered signal portions into two signals for quadrature processing wherein the adding comprises adding a first of the two split signals and the combined signal and adding a second of the two split signals and the combined signal.

25. (Canceled)

26. (Currently Amended) The method of claim 20 wherein the filtering is highpass filtering operating at baseband.

27. (Original) The method of claim 20 wherein the filtering is performed by an analog filter.

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28. (Original) The method of claim 20 wherein the wireless communication circuit has a specified operational bandwidth and filtering uses a filter bandwidth based on the operational bandwidth.

29. (Canceled)

30. (Canceled)

31. (Currently Amended) A system for the reduction of distortion in a wireless communication circuit having a combined signal including a desired signal and a jammer signal, comprising:

a radio frequency (RF) stage having an input configured to receive an RF signal and an output;

a four-way splitter having an input and first, second, third and fourth outputs, the four-way splitter input coupled to the RF stage output;

an adder comprising first and second adder portions, each adder portion having first and second inputs and an output, the outputs from the first and second adder portions providing reduced distortion output RF signals, the second inputs of the first and second adder portions being coupled to the third and fourth four-way splitter outputs, respectively having first and second inputs and an output, the first input coupled to the RF stage output;

a mixer comprising first and second mixer cores, each mixer core having an input, an output and an oscillator input, the first and second mixer inputs coupled to the first and second four-way splitter outputs, respectively having an input, an output and an oscillator input, the input being coupled to the RF stage output;

a filter comprising first and second filter portions, each filter portion having an input and an output, the first and second filter inputs being coupled to the mixer first and second mixer outputs, respectively having an input and an output; the filter input being coupled to the mixer output;

an up-mixer comprising first and second up-mixer portions, each up-mixer portion having an input, an output and an oscillator input, the first and second filter up-mixer

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~~inputs coupled to the first and second filter outputs, respectively having an input, an output and an oscillator input, the up-mixer input coupled to the filter output and the up-mixer output coupled to the second adder input;~~

~~a four-way splitter having an input and first, second, third and fourth outputs, the four-way splitter input coupled to the RF stage output;~~

~~the mixer comprising first and second mixer cores, each mixer core having an input, an output and an oscillator input, the first and second mixer inputs coupled to the first and second four-way splitter outputs, respectively;~~

~~the filter comprising first and second filter portions, each filter portion having an input and an output, the first and second filter inputs being coupled to the mixer first and second mixer outputs, respectively;~~

~~the up-mixer comprising first and second up-mixer portions, each up-mixer portion having an input, an output and an oscillator input, the first and second filter up-mixer inputs coupled to the first and second filter outputs, respectively;~~

~~a summer having first and second inputs and an output, the first and second inputs coupled to the first and second up-mixer outputs, respectively;~~

~~a two-way splitter having an input and first and second outputs, the input coupled to the summer output, the first and second two-way splitter outputs coupled to the first inputs of the first and second adder portions, respectively; and~~

~~the adder comprising first and second adder portions, each adder portion having first and second inputs and an output, the first inputs of the first and second adder portions being coupled to the first and second two-way splitter outputs, respectively, and the second inputs of the first and second adder portions being coupled to the third and fourth four-way splitter outputs, respectively.~~

32. (Canceled)

33. (Previously Presented) The circuit of claim 31 wherein the four-way splitter generates an output signal at the first and second outputs related to a gain factor and the signal at the four-way splitter input.

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34. (Previously Presented) The circuit of claim 33 wherein the four-way splitter generates an output signal at the third and fourth outputs inversely related to the gain factor and the signal at the four-way splitter input.